

Space Weather Forecast

Issued on Tuesday, 01 November 2022 at 00:20 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm days 3 and 4 (3 and 4 Nov).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the last 24 hours, with minor common class flares observed. There are two numbered sunspot regions on the visible disc. AR3135, is the largest region with well-developed leading and trailing spots. AR3131 is a large single spot with minor trailing spots. Three other unnumbered regions are small and inactive currently. No Earth-directed coronal mass ejections have been observed.

Solar Wind / Geomagnetic Activity: The solar wind is slightly elevated, with a flat trend. This is indicative of the waning fast wind of coronal hole 37, which we have been connected to in recent days. Total interplanetary magnetic field strength was weak, with the important north-south component varying weakly. Geomagnetic activity was Quiet to Unsettled (Kp 2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to continue Low, with a slight chance of an isolated moderate class flare.

Solar Wind / Geomagnetic Activity: No Earth-directed coronal mass ejections are forecast. Slightly elevated solar winds are forecast to become enhanced to perhaps reach elevated levels during day 1 (1 Nov) as the Earth transitions into another coronal hole fast wind, with elevated solar winds. A likely gradual decline in wind speeds before another fast wind arrives probably late on day 4 (3 Nov) or probably on day 4 (4 Nov). Geomagnetic activity mostly Quiet to Unsettled (Kp 2-3) throughout the period, with a chance of Active or Minor Geomagnetic Storm intervals (Kp 4-5) late on day 3 (3 Nov) and into day 4 (4 Nov).

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	5	20	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	5	10	20	20
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)